

# Profile of Benign Breast Diseases in an African Population

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**Abstract:** Benign Breast Diseases (BBD) refer to all non-malignant conditions of the breast and it received little attention in the past because most of the focus was on breast cancer, despite the fact that it constitutes majority of the presentation in breast clinics. The objective of this study was to evaluate comprehensively the profile of BBD in our environment, highlight the age group distribution of these BBDs and its different modes of presentation. This was a prospective cross-sectional study conducted between May 2009 and April 2010 at the Taimako Breast and Cervical Screening Centre on women who presented for breast screening. There were two thousand and sixty five study subjects, out of which one hundred and fifty women were diagnosed with BBD (7.3%), while one thousand nine hundred and fifteen (92.7%) had normal screening results. The mean age of those with BBD was  $27.9 \pm 9.6$  with an age range of 15 to 60 years. Breast lumps constituted 44.7% of the presentation of BBD and was the most common mode of presentation, while 17.3% of those diagnosed with BBD had no symptoms and were discovered following triple assessment. More than half (56.8%) of the women who complained of breast lumps did not actually have lumps following triple assessment. BBD comprised a spectrum of disorders, with Fibroadenoma being the commonest and occurred most frequently in the younger 2nd and 3rd decades as opposed to older decades.

**Keywords:** Benign Breast Disease, Fibroadenoma, Decade

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## 1. Introduction

The female breast is the seat of a myriad of diseases and lesions, majority of which are benign. A lot of attention is focused on breast cancer because breast cancer is the most dreaded disease of the female breast and also the most common malignancy in women [1-3], thereby neglecting the more common diseases of the breast which are largely benign [4-7].

Benign breast disease (BBD) refers to all non-malignant conditions of the breast. It encompasses a heterogeneous group of lesions that may present a wide range of symptoms or may be detected as incidental microscopic findings [4]. The BBD spectrum includes developmental abnormalities, inflammatory lesions, epithelial and stromal proliferation and neoplasms. About 30% of women will suffer from a benign breast disorder requiring treatment at sometime in their lives [8] and about 90% of women attending a breast clinic will have a benign breast condition [9, 10].

Due to the large proportion of women in breast clinics requesting treatment for symptoms of BBD and the inherent

malignant potential in some BBD, there has been increasing interest in BBD. The classification of BBD has been a subject of much debate due to poor correlation between clinical, pathological and radiological features in any particular case. Most literature tend to profile the spectrum of BBD only by histopathological examination, leaving out clinical entities which may have little or no histopathological correlation.

We sought to evaluate comprehensively the profile of BBDs using clinical, radiological and pathological diagnostic methods in order to capture all forms of BBD in our environment, as well as highlight the age group distribution and modes of presentation of these BBDs.

## 2. Main Body

### 2.1. Patient and Methods

This was a prospective cross-sectional study carried out at the Taimako Breast and cervical screening centre, Lafia, Nigeria between May 2009 and April 2010.

All women who presented to the centre for breast screening were included in the study. Women subsequently diagnosed

with cancer or those with obvious features of malignancy were excluded from the study. The subjects were required to give informed written consent prior to their enrollment in the study and ethical clearance was obtained from the Research and Ethics committee of the Jos University Teaching Hospital. Demographic data and other relevant history were obtained from the subjects following which they were subjected to triple assessment. Each had a clinical breast examination (CBE) and then breast imaging irrespective of the findings on CBE. Those below 35 years of age had an ultrasound of the breast, while those 35 years and above had mammography. Lumps discovered either by examination or imaging were biopsied and the specimen subjected to histology.

The data was entered into a pre-designed proforma and analyzed on the SPSS version 20 Chicago Illinois. Categorical data were expressed in frequency and percentages while continuous variables were summarized in means  $\pm$  standard

deviation. Chi square statistical test was used to determine the relationship between dependent and independent variables. Bonferroni correction was used to validate statistical significant findings. A 95% Confidence interval was used in this study, with a p value of  $< 0.05$  considered statistically significant.

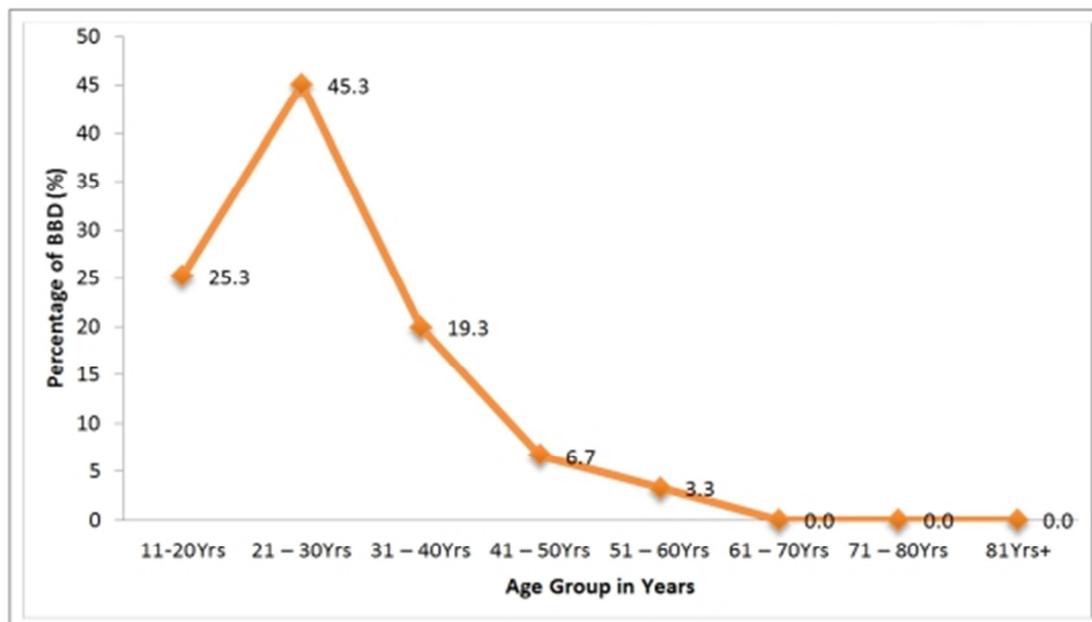
## 2.2. Results

A total of two thousand and sixty five women participated in the study, out of which one hundred and fifty were diagnosed with BBD (7.3%) and one thousand nine hundred and fifteen had normal breast screening results (92.7%). The mean age of those with BBD was  $27.9 \pm 9.6$  years with an age range of 15 to 60 years. Table 1 shows the age group distribution of the different types of BBD. Most types of BBD had the peak decade of occurrence as the third decade.

**Table 1.** Age group distribution of types of Benign Breast Disease.

Age group						
Benign Breast Diseases	11-20	21-30	31-40	41-50	51-60	Total
Fibroadenoma	10 (30.3%)	18 (54.5%)	3 (9.1%)	2 (6.1%)	0 (0.0%)	33 (100%)
Fibrocystic disease	9 (39.1%)	7 (30.4%)	5 (21.7%)	2 (8.7%)	0 (0.0%)	23 (100%)
Duct Ectasia	0 (0.0%)	0 (0.0%)	2 (66.7%)	1 (33.3%)	0 (0.0%)	3 (100%)
Abscess	6 (24.0%)	14 (56.0%)	3 (12.0%)	1 (4.0%)	1 (4.0%)	25 (100%)
Mastitis	6 (20.7%)	12 (56.0%)	10 (34.5%)	1 (3.4%)	0 (0.0%)	29 (100%)
Mastalgia	1 (10.0%)	6 (60.0%)	2 (20.0%)	1 (10.0%)	0 (0.0%)	10 (100%)
Cystosarcoma Phyllodes	1 (50.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (50.0%)	2 (100%)
Intra Ductal Papilloma	0 (0.0%)	1 (100%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (100%)
Sclerosing adenosis	0 (0.0%)	1 (50.0%)	1 (50.0%)	0 (0.0%)	0 (0.0%)	2 (100%)
Furuncle	1 (100%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (100%)
Breast Cysts	4 (19.0%)	9 (42.9%)	3 (14.3%)	2 (9.5%)	3 (14.3%)	21 (100%)
Total	38 (25.3%)	68 (45.3%)	29 (19.3%)	10 (6.7%)	5 (3.3%)	150 (100%)

Figure 1 depicts the age trend analysis of BBD. BBDs as a whole were most common in the 3rd decade followed by the 2nd decade and there were no BBDs in the 7th, 8th and 9th decades respectively.



**Figure 1.** Age group distribution of Benign breast disease.

Table 2 shows the age group distribution of subjects with BBD and normal screening. There is a statistically significant relationship between age of subjects and screening outcomes ( $X^2= 39.355$ ;  $P < 0.05$ ).

Age group 11-20 had the highest proportion 38 (13.3%) of subjects with BBD diagnosis. Age groups 21-30, 31-40, 41-50 and 51-60 had 68 (8.71%), 29 (5.7%), 10 (3.4%) and 5 (4.4%) respectively. Bonferroni correction however revealed that older age groups, 31-40 and above were less likely to have BBD.

**Table 2.** Age group distribution of subjects with BBD and normal screening.

Age in years	Total	Subject category		Test of significance
		Benign breast disease (BBD)	Normal screening	
11-20	285	38 (13.3%)	247 (86.7%)	$X^2=39.355^*$ $p < 0.001$
21-30	781	68 (8.7%)	713 (91.3%)	
31-40**	506	29 (5.7%)	477 (94.3%)	
41-50**	295	10 (3.4%)	285 (96.6%)	
51-60**	113	5 (4.4%)	108 (95.6%)	
61-70**	70	0 (0.0%)	70 (100.0%)	
71-80	14	0 (0.0%)	14 (100.0%)	
81+	1	0 (0.0%)	1 (100.0%)	

\* = Likelihood ratio  $X^2$

\*\* = Bonferroni correction ( $p$ ) < 0.05

Table 3 shows the mode of presentation of study subjects. Breast lumps were the most common modes of presentation of BBDs accounting for 44.7%. More than half (68.2%) of the subjects in this study had no complain inclusive of 17.3% diagnosed with BBD, while 155 (7.5%), 461 (22.3%) and 41 (2.0%) had complaints of lumps, discomfort and other varied complaints respectively. However, 43.2% of the subjects who complained of lumps actually had lumps and so BBD as against 56.8% who had no lump. Majority (90.2%) of the subjects who presented with other varied symptoms such as nipple discharge, rashes, skin changes, nipple/areolar changes and scars were actually found to have BBD as against 9.7% who did not have BBD. Bonferroni correction revealed that all the various symptom types contributed to the statistically significant findings.

**Table 3.** Modes of presentation of study subjects.

Symptoms	Total	BBD	Normal screening	Test of significance
Lump	155(7.5%)	67(43.2%)	88(56.8%)	$X^2 = 783.867$ $p < 0.001$
Discomfort	461(22.3%)	20(4.3%)	441(95.7%)	
Others*	41(2.0%)	37(90.2%)	4(9.8%)	
None	1408(68.2%)	26(1.8%)	1382(98.2%)	
Total	2065(100%)	150(7.3%)	1915(92.7%)	

others\*=nipple discharge, rashes, skin changes, nipple/areolar changes, scars etc

The most common BBD in our study was Fibroadenoma (22%) followed by Mastitis (19.3%) and breast abscess (16.7%), the rest are as depicted in Table 4.

**Table 4.** Distribution of Benign Breast Diseases.

Benign Breast Diseases	Frequency	Percentage
Fibroadenoma	33	22.0
Fibrocystic disease	23	15.3
Duct Ectasia	3	2.0
Abscess	25	16.7
Mastitis	29	19.3
Mastalgia	10	6.7
Cystosarcoma Phyllodes	2	1.3
Intra Ductal Papilloma	1	0.7
Sclerosing adenosis	2	1.3
Furuncle	1	0.7
Breast Cysts	21	14.0
Total	150	100.0

### 2.3. Discussion

Benign breast diseases are commonly encountered in clinical practice and arouse a lot of anxiety among patients. Our data showed that the distribution of BBD exhibited a distinct pattern starting from the 2nd decade which had a significant number, then peaking at the 3rd decade and then falling rapidly, with the 7th and 8th decade having no women with BBD. Some studies are consistent with ours with the 3rd decade being the age group with the maximum incidence of BBD [11-13], while in others the incidence of BBD peaked in the 4th and 5th decade [14-17]. The different patterns are determined by the relative prevalence of the various BBDs in those environments.

In our study, breast lumps were the most common presentation of BBD which is in tandem with numerous studies, [13, 18, 19] but at variance with recent studies by Krishnaswamy [20] and Akshara Gupta *et al* [21] in which pain was the commonest complain. This may not be unconnected with the fact that Fibroadenoma which is the

most common BBD in this environment is not usually associated with pain. However, a significant finding in our study was that more than half of women who complained of a breast lump did not actually have a lump. This underscores the anxiety women have when palpating the breast bordering on fear of cancer in our environment, where every symptom in the breast more so breast lump is perceived as cancer. A significant proportion of BBDs (17.3%) were discovered as incidental findings following triple assessment even though the subjects had no complain.

Fibroadenoma was the most common BBD in our study with maximum incidence in the 3rd decade. This is consistent with studies in this environment and many other parts of the world, [22-24] but at variance with studies in western population where fibrocystic change is the most common [25, 26]. This may be due to the well documented racial predilection to Fibroadenoma among negroes [27, 28].

The inflammatory breast diseases (mastitis and breast abscess) were the next common BBD in the study population. This could likely be due to the high parity amongst them and therefore high frequency of pathologies associated with lactation. The 3rd decade as the decade with maximum incidence may be due to the fact that most women in this environment marry in late teens and early twenties and birth their children almost immediately within the 3rd decade.

Fibrocystic disease constituted 15.3% of BBD and was slightly less than the inflammatory breast diseases in our study. However, some studies show fibrocystic disease to be the most common BBD, being that the process is observed clinically in up to 50% and histologically in 90% of women [29, 30]. The low incidence in our study may be due to the fact that it is present in association with other pathologies and our diagnosis is based on the main pathology present. Fibrocystic disease was also most common in the second and third decade in our study. The age group incidence of Fibrocystic disease varies geographically with some studies reporting the highest incidence in 5th decade [31]. The reasons are unclear but may be due to differences in age of menarche, parity, breast feeding practices and use of oral contraceptives which this study did not explore.

Breast Cysts arise as a result of a non-integrated involution of stroma and epithelium [8] and occur most commonly in the last decade of reproductive life but could occur in any age group. However, it was found to be present in all the age groups in our study.

Cases of Mastalgia constituted 6.7% of BBD in our study and the incidence was low compared to the west. It affects up to 70% of women at some time in their lives and constitute about 50% of referrals to breast clinics in western populations [32]. It was most common in the 3rd decade in our study as well as in a study by Khanzada et al [12]. However, in a 3 year Australian study, the Mastalgia sufferer had an average of 42 years [33] and in studies from the UK, Mastalgia was most common in the 4th and 5th decades respectively [34-36]. There were 3 cases of Duct ectasia in our study population within the age range of 31-50 years constituting 2% of BBD. This proportion and age group

distribution in our study is similar to that in western population [37].

Two cases of Cystosarcoma phyllodes were seen constituting 1.3% of BBD in our study. One case occurred in the 2nd decade and the other in the sixth decade. A study by Adeniji et al [23] in a 10 year experience of benign breast diseases in Ile-Ife reported 2 cases of Phyllode's tumor in a 21 year old and 47 year old female similar to our study. However, studies in Nigeria show Phyllode's tumor to occur mostly in the 2nd decade [38, 39] though it is reported in literature to be rare in adolescence and occur predominantly in the age group between 40 and 50 years [40, 41].

### 3. Conclusion

Thus, we conclude that BBD comprises a spectrum of disorders, with Fibroadenoma being the commonest BBD. BBDs occurred most frequently in the younger 2nd and 3rd decades as opposed to older decades. A significant proportion of BBDs in our study were discovered following breast screening even though the subjects had no complain.

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